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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,087	Applicant(s) CAVIGLIA ET AL.	
	Examiner STEVEN WOOD	Art Unit 2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 23 September 2009.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 24-37,39-57 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 24-37,39-57 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to Applicant's request for reconsideration of Application No. **10/598087**, which was filed on **09/23/2009**. Examiner hereby issues a final rejection of the claims.

Examiner's Comments

2. **Claims 1 – 23, 38** are cancelled. **Claims 24, 32, 39, 40, 45, 51** are amended. **Claims 24 – 37, 39 – 57** are currently pending.

3. Applicant argues, regarding **claim 24**, see Applicant's Remarks second full Par., Pg. 10, that de Boer (US 6259837 B1) and Deboer (US 7287081 B1) teach away from a combination with each other. "A reference may be said to teach away when a person of ordinary skill, upon reading the reference...would be led in a direction divergent from the path that was taken by the applicant." In re Haruna, 249 F.3d 1327, 58USPQ2d 1517 (Fed. Cir. 2001).

Applicant asserts that de Boer limits its teachings to networks that use fiber optic rings (Applicant's Remarks, second full Par., Pg. 10). Deboer specifically contemplates that the links of the network may be formed from any transport medium (Deboer; (11)) and that the protection paths may be implemented in the form of a ring (Deboer; (12)). Applicant then apparently relies on the fact that de Boer describes implementing the interface between various architectures with differing levels of protection as a complicated task (Applicant's Remarks last sentence, second full Par., Pg. 10). Though pertinent, this alone would not be determinative.

Applicant continues with the conclusory statement that neither the problems surrounding the use of matched nodes that interconnect two BLSR networks, nor the solution provided by de Boer, have anything to do with mesh networks in which ASTN protocols may be executed, as disclosed by Deboer. However, Deboer specifically discloses that the ASTN architecture of protection paths may be implemented in the form of a ring (Deboer; (12)) and that the links of the network may be formed from any transport medium (Deboer; (11)), making the subject matter disclosed in Deboer directly relevant to the problems addressed in de Boer's fiber rings.

Examiner tends to agree with Applicant that matched node interconnections of BLSR networks and ASTN protocols don't immediately call each other to mind, thereby satisfying Applicant's contention that these concepts are unrelated. However, the simple non-relationship of being unrelated does not in itself justify a conclusion that either and/or both concepts teach away from incorporation with the other in an obviousness combination, or that such a combination would necessarily detract from the benefits provided.

Specifically, Applicant has not provided evidentiary grounds to support the conclusion that a combination of de Boer and Deboer would detract from the benefits of de Boer (Applicant's Remarks second to last sentence, third full Par., Pg. 10). Essentially Applicant's argument boils down to "these concepts are unrelated" and therefore if combined, "would detract from one another." Without additional rationale, Applicant does not provide sufficient indications of how the two references would actually detract from each other.In the instant case, Applicant has not pointed to nor has Examiner identified a teaching in either reference, de Boer or Deboer, which would lead a person of ordinary skill in the art in a direction divergent from the path taken by Applicant.

Furthermore, neither the disclosures of de Boer or Deboer “criticize, discredit, or otherwise discourage the solution claimed….” as required for "teaching away" by In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). In fact, Deboer suggests that a computer program product implementation of the ASTN architecture could be fixed in a computer data signal embodied in a carrier wave transmitted on optical communications lines (Deboer; (41)). Deboer also discloses that the links of the network may be formed from any transport medium (Deboer; (11)), with the protection paths forming a ring topology (Deboer; (12)). Examiner interprets Deboer as indicating potential for merging the ASTN mesh transport network architecture with the series of interconnected fiber rings implementation of de Boer.

Therefore, Examiner remains justified in relying on the combined teaching of de Boer and Deboer in making a final rejection of the claims.

4. Applicant argues, regarding **claim 24**, see Applicant’s Remarks fourth full Par., Pg. 8, that neither de Boer nor Deboer teaches or suggests interconnecting first and second networks via a transport network having an ASTN control plane, and the transport network interconnecting primary terminals and the first and second nodes. Applicant continues to argue, see Applicant’s Remarks third full Par., Pg. 9, that Deboer does not teach or suggest interconnecting first and second networks with the mesh network, and says nothing about connecting primary terminals and first and second nodes in the first and second networks with the mesh network.

de Boer specifically discloses a first and second network with primary terminals and first and second nodes interconnected. Looking at Fig. 1 of Deboer, it is easy to see that the mesh network can be viewed as a collection of interconnected ring networks. This observation,

coupled with the disclosure in Deboer of the ASTN architecture, the fact that the network links in Deboer can be formed from any transport medium, and the fact that Deboer contemplates an ASTN architecture implemented on a ring topology, all lead to the conclusion that it would be feasible to combine the interconnected networks of de Boer with the transport network having an ASTN control plane of Deboer connecting the (sub)networks.

Therefore, Examiner remains justified in relying on the combined teaching of de Boer and Deboer in making a final rejection of the claims.

5. **Claims 24 – 37, 39 – 57** are finally rejected. Examiner provides no new grounds of rejection.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 24, 26 – 29 & 35** rejected under 35 U.S.C. 103(a) as being unpatentable over de Boer, et al., (US 6259837 B1) (hereinafter de Boer) in view of Deboer, et al., (US 7287081 B1) (hereinafter Deboer).

8. Regarding **claim 24**, de Boer discloses a protection system for first and second interconnected communication networks, each network having a primary terminal configured to communicatively interconnect the networks over a primary communication circuit, the system comprising: a first node associated with the primary terminal in the first network, (Fig. 4; Col. 2, lines 14 – 15; network elements NE1-NE7 reside in ring 50 (**first network**) and network elements NE8-NE12 reside in ring 52; Col. 2, lines 25 – 27; for a traffic over a path between NE1 and NE12, the primary node are NE6 (**a first node associated with the primary terminal**) and NE8).

And configured to establish a secondary communication circuit with the primary terminal in the second network responsive to a failure of the primary terminal in the first network, (Col. 2, lines 38 – 40; path in each direction between NE6 and NE8 (**with the primary terminal in the second network**) by way of NE5, NE4, NE3, NE10 and NE9 is called the secondary path 56; Col. 2, lines 41 – 44; secondary path 56 is invoked (**configured to establish a secondary communication circuit**) when the primary inter-ring connection fails, that is to say, when either or both of the primary node (NE6 or NE8) (**responsive to a failure of the primary terminal in the first network**) and/or the inter-ring circuit between the primary nodes fail), a second node associated with the primary terminal in the second network, (Col. 2, lines 14 – 15; network elements NE1-NE7 reside in ring 50 and network elements NE8-NE12 reside in ring 52 (**second network**); Col. 2, lines 25 – 27; for a traffic over a path between NE1 and NE12, the primary node are NE6 and NE8 (**a second node associated with the primary terminal**)).

The second node configured to establish a secondary communication circuit with the primary terminal in the first network responsive to a failure of the primary terminal in the second

network, (Col. 2, lines 38 – 40; path in each direction between NE6 (**with the primary terminal in the first network**) and NE8 (**second node**) by way of NE5, NE4, NE3, NE10 and NE9 is called the secondary path 56; Col. 2, lines 41 – 44; secondary path 56 is invoked (**configured to establish a secondary communication circuit**) when the primary inter-ring connection fails, that is to say, when either or both of the primary node (NE6 or NE8) (**responsive to a failure of the primary terminal in the second network**) and/or the inter-ring circuit between the primary nodes fail).

Wherein the first and second networks are interconnected, (Fig. 4; Col. 2, lines 6 – 7; interconnecting two bidirectional line switched rings (BLSRs)).

However, de Boer does not explicitly teach *the system wherein the connection is by a transport network having an Automatic Switched Transport Network (ASTN) control plane, and wherein the primary terminals and the first and second nodes are connected by the transport network.*

Deboer explicitly discloses the system wherein the connection is by a transport network having an Automatic Switched Transport Network (ASTN) control plane, (Figs. 1 & 2; Col. 3, lines 55 – 57; a meshed automatically switched transport network (ASTN) (**transport network**) in which the present invention may be employed is shown in more detail to include a control plane 52 (**having an ASTN control plane**)).

And wherein the primary terminals and the first and second nodes are connected by the transport network, (Col. 3, lines 21 – 26; a number of devices 12, 14, 16, etc. (**primary terminals and the first and second nodes**), coupled together via links, such as links L1, L2, etc. The links may be formed from any transport medium (**connected by the transport network**). A

call between two end points, such as end point 22 and end point 24 (**primary terminals and the first and second nodes**) causes a connection to be formed between the endpoints).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of de Boer by incorporating the teaching of Deboer to provide a method of operating a computer system in a network, wherein the set of instructions includes a Forced Restoration instruction including an identifier of a call having a working connection between two devices in the network, the Forced Restoration instruction for causing the computer system to identify a restoration connection between the two devices, and for forwarding traffic associated with the call between the two devices over the protection connection to permit maintenance of the working connection (Deboer; Col. 2, lines 33 - 45).

9. Regarding **claim 26**, the rejection of claim 24 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer discloses the system, wherein the primary terminal and the first node in the first network comprise source nodes, and wherein the primary terminal and the second node in the second network comprise destination nodes, (de Boer: Fig. 4; Col. 2, lines 25 – 29; for a traffic over a path between NE1 and NE12, the primary node are NE6 and NE8. The primary node pair are connected bidirectionally; (6); NE1 (source node or service access point) (**primary terminal and the first node in the first network (NE6) comprise source nodes, and primary terminal and the second node in the second network (NE8) comprise destination nodes**)).

10. Regarding **claim 27**, the rejection of claim 24 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer discloses the system, wherein the primary terminal and the first node in the first network comprise destination nodes, and wherein the primary terminal and the second node in the second network comprise source nodes, (de Boer: Fig. 4; Col. 2, lines 25 – 29; for a traffic over a path between NE1 and NE12, the primary node are NE6 and NE8. The primary node pair are connected bidirectionally (**primary terminal and the first node in the first network (NE6) comprise destination nodes, and primary terminal and the second node in the second network (NE8) comprise source nodes**)).

11. Regarding **claim 28**, the rejection of claim 24 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer discloses the system, wherein during normal operation, the primary terminals in the first and second networks communicate over the primary communication circuit and use an on-the-fly circuit restoration mechanism, (de Boer: Col. 2, lines 49 – 52; primary nodes NE6 and NE8 (**primary terminals in the first and second networks**) have modules 70 and 72 (**use an on-the-fly circuit restoration mechanism**) respectively which perform transmission of traffic in either DCW (drop and continue on working) mode or DCP (drop and continue on protection) mode; Col. 3, lines 11 – 14; primary node being comprised of a signaling module for sending into the ring in which it is located (**primary terminals communicating over the primary communication circuit**) a protocol signal indicative of a failure in a primary inter-ring connection).

12. Regarding **claim 29**, the rejection of claim 28 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer discloses the system, wherein the primary terminal in the first network comprises a primary origin node, and wherein the primary terminal in the second network comprises a primary destination node, (de Boer: Fig. 4; Col. 2, lines 25 – 29; for a traffic over a path between NE1 and NE12, the primary node are NE6 and NE8. The primary node pair are connected bidirectionally; Col. 5, lines 44 – 45; NE1 (source node or service access point) (**primary terminal in the first network (NE6) comprises a primary origin node, and primary terminal in the second network (NE8) comprises a primary destination node**)).

13. Regarding **claim 35**, the rejection of claim 27 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer discloses the system, wherein the primary origin node comprises a controller node configured to calculate a circuit routing to the second node, and signal the second node to establish the secondary communication circuit, (de Boer: Col. 3, lines 12 – 17; primary node (**primary origin node**) being comprised of a signaling module for sending into the ring in which it is located a protocol signal indicative of a failure in a primary inter-ring connection, and a protocol module for setting said protocol signal to trigger a ring switch (**configured to calculate a circuit routing to the second node**) in said ring and to invoke a secondary inter-ring connection (**to establish the secondary communication circuit**) through a secondary node (**by signaling the second node**)).

14. **Claims 25, 51 – 57** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer and Deboer, in view of Wei, et al., (US 20070014573 A1) (hereinafter Wei).

15. Regarding **claim 25**, the rejection of claim 24 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system, wherein at least one of the first and second networks comprises an automatic control plane (ACP), and wherein the other of the first and second networks is protected by one of an automatic switching mechanism and a control plane mechanism.*

Wei explicitly discloses the system, wherein at least one of the first and second networks comprises an automatic control plane (ACP), and wherein the other of the first and second networks is protected by one of an automatic switching mechanism and a control plane mechanism, (Figs. 2 – 41 (**first and second networks**); paragraph 71; implemented by networking with (**comprise and are protected by**) distributed restoration- based OXC, DXC or automatic switched optical network (ASON) (**automatic switching mechanism**) node equipment, i.e. the distributed control processing unit (not shown) (**and control plane mechanism**) embedded in the relevant nodes in the network).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer and Deboer by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

16. Regarding **claim 51**, the rejection of claim 38 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system wherein the first network comprises an SNCP network having a dual ring interconnection protection scheme*.

Wei explicitly discloses the system wherein the first network comprises an SNCP network having a dual ring interconnection protection scheme, (Fig. 2)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

17. Regarding **claim 52**, the rejection of claim 51 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Wei discloses the system wherein if both of the primary terminals detect a failure the primary terminal in the SNCP network indicates the failure to the first node, and switches an ASTN protection group to the first node to establish the second communication circuit, (Fig. 14; paragraph 79; when a failure occurs on the link between the node 110 of the ring network and the primary node 210 of the mesh network (**if both of the primary terminals detect a failure**), the node of the ring network (**the primary terminal in the SNCP network**) can select (**indicates the failure to the first node**) only the path transmitted from the secondary node 220 of the mesh network and the node

120 of the ring network to receive (**and to establish the second communication circuit**); paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**switching an ASTN protection group**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**to the first node**) in the network).

18. Regarding **claim 53**, the rejection of claim 51 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Wei discloses the system, wherein if both of the primary terminals detect a failure, the primary terminal in the second network indicates the failure to the second node, and switches an ASTN protection group to the first node to establish the second communication circuit, (paragraph 79; when a failure occurs on the link between the node 110 of the ring network and the primary node 210 of the mesh network (**if both of the primary terminals detect a failure**), the primary node 210 of the mesh network (**the primary terminal in the second network**) can select (**indicates the failure to the second node**) to receive only the path transmitted from the node 120 of the ring network and the secondary node 220 of the mesh network to receive (**and to establish the second communication circuit**); paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**switching an ASTN protection group**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**to the first node**) in the network).

19. Regarding **claim 54**, the rejection of claim 51 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Wei disclose the system wherein the first node is configured to detect a failure of the primary terminal in the in the SNCP network, (de Boer: Fig. 5; (4); in the case of such a failure 100 as shown in the figure, both primary nodes NE6 (**first node configured to detect a failure**) and NE8 will detect this condition by detecting a Loss of Signal (LOS or LAIS signals) on their tributaries (**of the primary terminal**)).

And control an ASTN protection group to restore a connection with the primary terminal in the second network, (Wei: paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**control an ASTN**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**protection group**) in the network; paragraph 79; primary node 210 of the mesh network can select to receive only the path transmitted from the node 120 of the ring network and the secondary node 220 of the mesh network to receive (**to restore a connection with the primary terminal in the second network**)).

20. Regarding **claim 55**, the rejection of claim 51 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Wei disclose the system, wherein the first node is configured to detect a failure of the primary terminal in the in the SNCP network, and control an ASTN protection group to restore a connection with the second node, (Wei: paragraph 79; when a failure occurs on the link between the node 110 of the ring network and the primary node 210 of the mesh network, the primary node 210 of the mesh network can

select to receive only the path transmitted from the node 120 of the ring network and the secondary node 220 of the mesh network to receive, and the node of the ring network can select (**first node configured to detect a failure of the primary terminal in the SNCP network**) only the path transmitted from the secondary node 220 (**and to restore a connection with the second node**) of the mesh network and the node 120 of the ring network to receive; paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**control an ASTN**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**protection group**) in the network).

21. Regarding **claim 56**, the rejection of claim 51 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Wei disclose the system, wherein an ASTN protection group switches to the first node in the SNCP network to establish a communication circuit between the first and second nodes, (Wei: paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**an ASTN**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**protection group**) in the network; paragraph 79; the node of the ring network can select (**switches to the first node configured in the SNCP network**) only the path transmitted from the secondary node 220 (**to establish a communication circuit between the first and second nodes**) of the mesh network and the node 120 of the ring network to receive).

Regarding **claim 57**, the rejection of claim 51 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Wei disclose the system,

wherein an ASTN protection group switches to the second node in the second network to establish a communication circuit between the first and second nodes, (Wei: paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**an ASTN**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**protection group**) in the network; paragraph 79; the primary node 210 of the mesh network can select (**switches to the second node in the second network**) to receive only the path transmitted from the node 120 (**to establish a communication circuit between the first and second nodes**) of the ring network and the secondary node 220 of the mesh network to receive).

22. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer and Deboer in view of Saleh, et al., (US 6973023 B1) (hereinafter Saleh).

23. Regarding **claim 30**, the rejection of claim 29 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system wherein the primary origin node comprises a controller node, and wherein the primary destination node comprises a cooperator node.*

Saleh, explicitly discloses the system wherein the primary origin node comprises a controller node, and wherein the primary destination node comprises a cooperator node, (Col. 6, lines 51 – 55; source and destination are also used herein in referring to the two end-nodes. In such a relationship, the node with a numerically lower node ID assumes the role of the master (or source) node (**primary origin node comprises a controller node**), while the other assumes the

role of the slave (or destination) node (**primary destination node comprises a cooperator node**)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer and Deboer by incorporating the teaching of Saleh to provide a centralized routing protocol that supports relatively simple provisioning and relatively fast restoration (on the order of, for example, 50 ms), while providing relatively efficient bandwidth usage (i.e., minimizing excess bandwidth requirements for restoration, on the order of less than 100% redundant capacity and preferably less than 50% redundant capacity) (Saleh; Col. 2, lines 53 – 60).

24. **Claim 31 - 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer, Deboer and Saleh in view of Parrish (US 6683848 B1).

25. Regarding **claim 31**, the rejection of claim 30 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Saleh does not explicitly teach *the system wherein the primary destination node is configured to detect a failure of the primary origin node responsive to detecting a failed synchronization attempt with the primary origin node*.

Parrish explicitly discloses the system wherein the primary destination node is configured to detect a failure of the primary origin node responsive to detecting a failed synchronization attempt with the primary origin node, (Col. 13, lines 36 – 39; if a framing error or other loss of synchronization has been detected (**responsive to detecting a failed synchronization attempt**

with the primary origin node) at step 128 and the slave has not failed at step 130, the slave (**primary destination node**) readily determines (**configured to detect**) that the master has failed (**failure of primary origin node**) at step 140).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify combined teaching of de Boer, Deboer and Saleh by incorporating the teaching of Parrish to provide multiple layers of fault protection, including detection, source identification, and handling of faults associated with cards within the device, helping to prevent single points of failure from propagating in the system, reduce down time, and satisfy high availability and other requirements (Parrish; Col. 2, lines 60 – 65).

26. Regarding **claim 32**, the rejection of claim 31 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, Saleh and Parrish discloses the system wherein the primary destination node is further configured to establish the secondary communication circuit with the first node in the first network, (de Boer: Col. 2, lines 38 – 44; path in each direction between NE6 (**with the first node in the first network**) and NE8 (**primary destination node**) by way of NE5, NE4, NE3, NE10 and NE9 is called the secondary path 56. The secondary path 56 is invoked (**configured to establish a secondary communication circuit**) when the primary inter-ring connection fails, that is to say, when either or both of the primary node (NE6 or NE8) (**responsive to a failure of the primary terminal in the second network**) and/or the inter-ring circuit between the primary nodes fail).

Responsive to detecting the failed synchronization attempt with the primary destination node, (Parrish: Col. 13, lines 36 – 39; if a framing error or other loss of synchronization has

been detected at step 128 and the slave has not failed at step 130, the slave readily determines that the master has failed at step 140 (**responsive to detecting a failed synchronization attempt with the primary origin node**).

27. Regarding **claim 33**, the rejection of claim 30 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Saleh does not explicitly teach *the system wherein the primary origin node is configured to detect a failure of the of the primary destination node responsive to detecting a failed synchronization attempt with the primary destination node*.

Parrish explicitly discloses the system wherein the primary origin node is configured to detect a failure of the of the primary destination node responsive to detecting a failed synchronization attempt with the primary destination node, (Col. 13, lines 15 – 19; if a framing error or loss of synchronization has been detected (**responsive to detecting the failed synchronization attempt with the primary origin node**) at step 128 and the slave has failed or is otherwise experiencing an error condition at step 130, the master (**primary origin node**) readily determines (**configured to detect**) that the slave has failed (**failure of the primary destination node**) at step 132).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer and Saleh by incorporating the teaching of Parrish to provide multiple layers of fault protection, including detection, source identification, and handling of faults associated with cards within the device, helping to prevent single points of

failure from propagating in the system, reduce down time, and satisfy high availability and other requirements (Parrish; Col. 2, lines 60 – 65).

28. Regarding **claim 34**, the rejection of claim 33 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, Saleh and Parrish discloses the system wherein the primary origin node is further configured to establish the secondary communication circuit with the second node in the second network , (de Boer: Col. 2, lines 38 – 44; path in each direction between NE6 (**primary origin node**) and NE8 (**with the second node in the second network**) by way of NE5, NE4, NE3, NE10 and NE9 is called the secondary path 56. The secondary path 56 is invoked (**configured to establish a secondary communication circuit**) when the primary inter-ring connection fails, that is to say, when either or both of the primary node (NE6 or NE8) (**responsive to a failure of the primary terminal in the first network**) and/or the inter-ring circuit between the primary nodes fail).

Responsive to detecting the failed synchronization attempt with the primary destination node, (Parrish: Col. 13, lines 15 – 19; if a framing error or loss of synchronization has been detected (**responsive to detecting the failed synchronization attempt with the primary origin node**) at step 128 and the slave has failed or is otherwise experiencing an error condition at step 130, the master (**primary origin node**) readily determines (**configured to detect**) that the slave has failed (**failure of the primary destination node**) at step 132).

29. **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer and Deboer, in view of Valli, et al., (US 6181677 B1) (hereinafter Valli).

30. Regarding **claim 36**, the rejection of claim 24 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system wherein each of the first and second nodes is configured to detect a failure of its associated primary terminal using a heartbeat protocol communicated with its associated primary terminal*.

Valli explicitly discloses the system, wherein each of the first and second nodes is configured to detect a failure of its associated primary terminal using a heartbeat protocol communicated with its associated primary terminal, (Col. 4, lines 14 – 21; (1) a heartbeat "source" function (**using a heartbeat protocol**), which locally generates heartbeat messages that are sent to remote units; and (2) a heartbeat "monitor" function, which monitors incoming messages for heartbeat messages (**communicated with the associated primary terminal of each node**) and ensures that whenever communication is "lost" (interrupted) (**configured to detect a failure of its associated primary terminal**) between the local data service unit or channel service unit (DSU/CSU) and one of the remote units (**each of the first and second nodes**), the local unit establishes an alternate communications link via a "back-up" communications network (**secondary terminal**)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer and Deboer by incorporating the teaching of Valli to allows the user of a communications network to quickly determine when interruptions of the carrier network occur so that corrective actions may be immediately taken (Valli; Col. 1, line 66 – Col. 2, line 6).

31. **Claim 37** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer, Deboer and Valli, in view of Wei.

32. Regarding **claim 37**, the rejection of claim 36 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Valli does not explicitly teach *the system, wherein at least one of the first and second nodes is configured to establish a reset circuit with the other of the first and second nodes responsive to a failure of both the primary terminals*.

Wei explicitly discloses the system, wherein at least one of the first and second nodes is configured to establish a reset circuit with the other of the first and second nodes responsive to a failure of both the primary terminals, (Fig. 39; paragraph 104; when a link failure happens to the link between the networks for the interconnection path between the ring network and the mesh network (**responsive to a failure of both primary terminals**), the local link failure may be detected by the nodes 4 and 6, the path selector of the node 4 and the path selector of the node 6 (**at least one of the first and second nodes**) will perform selection (**configured to establish a reset circuit with the other of the first and second nodes**) to pick up one from the two services in order to assure the path transmission).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer and Valli by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring

network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

33. **Claim 39** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer and Deboer in view of the "Principles for a Telecommunications Management Network" disclosure by the International Telecommunication Union, M.3010; http://www.itu.int/rec/T-REC-M.3010/en; http://www.itu.int/rec/dologin_pub.asp?lang=e&id=T-REC-M.3010-199210-S!!PDF-E&type=items.

34. Regarding **claim 39**, the rejection of claim 38 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system, wherein at least one of the first and second networks comprises a network based on a TMN ITU-T M. 3010 management architecture*.

The International Telecommunication Union discloses the system, wherein at least one of the first and second networks comprises a network based on a TMN ITU-T M. 3010 management architecture, (http://www.itu.int/rec/T-REC-M.3010/en; "Principles for a Telecommunications Management Network," International Telecommunication Union, M.3010, October, 1992 (**a network based on a TMN ITU-T M.3010 management architecture**)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of de Boer by incorporating the teaching of the International Telecommunication Union, because this standard was well known in the art and widely used at the time of the invention.

35. **Claims 40 – 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer and Deboer, in view of Licata (US 20030206515 A1) (hereinafter Licata).

36. Regarding **claim 40**, the rejection of claim 38 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system, wherein at least one of the first and second networks comprises a MS-SPRing network*.

Licata explicitly discloses the system, wherein at least one of the first and second networks comprises a MS-SPRing network, (paragraph 6; in the synchronous digital hierarchy (SDH) MS-SP (Multiplex Section Shared Protection) RING networks).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer and Deboer by incorporating the teaching of Licata to indicate an interconnection architecture between an MS shared protection ring and a Dual Node and Drop & Continue high order SNCP ring by utilizing only two nodes but avoiding the management complexity of the known solutions (Licata; paragraph 11).

37. Regarding **claim 41**, the rejection of claim 40 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Licata discloses the system, wherein the first network comprises the MS-SPRing network, and wherein path information for the MS-SPRing network is configured according to one or more protection diagrams that indicate a communication path between the primary terminal in the MS-SPRing network and the

first node, (Licata: Figs. 1 – 5 (**according to one or more protection diagrams according to which**); paragraph 23; a protected path from a source node A to a destination node H utilizes a working fiber from A (**the first node**) to C (primary node) (**and primary terminal in the MS-SPRing network**). Present in the node H is a Path Selector (PS.sub.H) that selects the path coming from one side or from the other (**path information for the MS-SPRing network is configured**) (depending on the path status (**indicating a communication path therebetween**)).

38. Regarding **claim 42**, the rejection of claim 41 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer and Licata discloses the system, wherein the MS-SPRing network is configured to switch client traffic to the first node responsive to a failure of the primary terminal MS-SPRing network, (Licata: paragraph 6; a distributed protection mechanism is implemented that allows the automatic traffic restoration should a fault occur in the connection fibers (**responsive to a failure of the primary terminal MS-SPRing network**). In other words, the MS-SP ring networks (**MS-Spring network**) perform the automatic traffic restoration through a synchronized re-routing of said traffic (**configured to switch client traffic**), which is carried out at each node (**to the first node**) of the ring).

39. **Claim 43** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer, Deboer, and Licata in view of Wei.

40. Regarding **claim 43**, the rejection of claim 42 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Licata does not explicitly

teach *the system wherein the primary terminal in the second network is configured to send a first restoration message to the primary terminal in the MS-SPRing network to the start an on-the-fly ASTN restoration scheme.*

Wei explicitly discloses the system wherein the primary terminal in the second network is configured to send a first restoration message to the primary terminal in the MS-SPRing network to the start an on-the-fly ASTN restoration scheme, (Figs. 8 – 12 (**to the primary terminal in the MS-SPRing netowork**); paragraph 67; 1) The backup path is not setup for the path in the mesh network until receiving a notification message (**configured to send a first restoration message**) from the destination or the failure node (**primary terminal in the second network**), when a failure with the dropped path is confirmed in the mesh network, the path selection will be calculated in real time to setup a backup path (**to start an on-the-fly restoration scheme**); paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**a type of ASTN restoration scheme**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes in the network; paragraph 73).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer, and Licata by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

41. **Claims 45 – 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer and Deboer, in view of Mascolo (US 20040213149 A1).

42. Regarding **claim 45**, the rejection of claim 38 is incorporated and only further limitations will be addressed. The combined teaching of de Boer and Deboer does not explicitly teach *the system, wherein at least one of the first and second networks comprises a SNCP network*.

Mascolo explicitly discloses the system wherein at least one of the first and second networks comprises a SNCP network, (paragraph 29; SDH/SONET networks, ring or meshed, physical or virtual, and with any known protection mechanisms deployed, like MS/SPRING, SNCP (**at least one of the first and second networks comprises a SNCP network**), or others).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer and Deboer by incorporating the teaching of Mascolo to provide a method for using the complete resource capacity of SDH/SONET network, subject to a protection mechanism, in the presence of a data (packet) network (Mascolo; paragraph 10).

43. Regarding **claim 46**, the rejection of claim 45 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Mascolo discloses the system wherein the first network comprises a virtual ring SNCP network, (Mascolo: paragraph 29; SDH/SONET networks, ring or meshed, physical or virtual (**first network comprises a virtual ring**), and with any known protection mechanisms deployed, like MS/SPRING, SNCP (**SNCP network**), or others).

44. Regarding **claim 47**, the rejection of claim 46 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Mascolo discloses the system wherein if the primary terminal in the virtual ring SNCP network detects a failure at a client input, the primary terminal in the virtual ring SNCP network is configured to indicate the failure to the first node, (de Boer: (4); both primary nodes (**primary terminal**) are equipped with a protection module 102 and 104 which performs selective protection procedure in their own ring (**in the first network**). According to this procedure, upon detecting a LOS or LAIS on its tributaries (**detecting a failure at the client input**), a primary node performs a selective ring switch and reroute the affected traffic to the protection bandwidth. The protection module 102 or 104 includes a detection module for detecting a failure, a signaling module for sending messages in the form of protocol signals (**indicates the failure**) to other nodes in its own ring; (6); a selective ring switch can be performed at NE7 or more commonly at NE1 (**to the first node**) (source node or service access point)).

45. **Claims 48 - 50** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teaching of de Boer, Deboer, and Mascolo, in view of Wei.

46. Regarding **claim 48**, the rejection of claim 47 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Mascolo does not explicitly teach *the system, wherein the primary terminal in the second network begins an ASTN traffic*

restoration procedure to the second node responsive to detecting the failure of the primary terminal in the virtual ring SNCP network.

Wei explicitly discloses the system, wherein the primary terminal in the second network begins an ASTN traffic restoration procedure to the second node responsive to detecting the failure of the primary terminal in the virtual ring SNCP network, (paragraph 71; implemented by networking with distributed restoration- automatic switched optical network (ASON) (**beginning an ASTN traffic restoration procedure**) node equipment, i.e. the distributed control processing unit (not shown) embedded in the relevant nodes (**by the primary terminal in the second network**) in the network; paragraph 102; link failure between the networks happens to the path between the ring network and the mesh network, specifically, the location of the failure is indicated by SX in FIG. 37 (**responsive to detecting the failure of the primary terminal in the virtual ring SNCP network**), a node failure happens to the interconnection node between the mesh network and the ring network. In the case shown in FIG. 37, regardless of the location of the failure, there will be corresponding path selector to carry out appropriate path selection in order to guarantee the path with the protection against a failure in the ring, in the mesh network (**to the second node**) and between the networks).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer, and Mascolo by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

47. Regarding **claim 49**, the rejection of claim 47 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Mascolo does not explicitly teach *the system, wherein the primary terminal in the virtual ring SNCP network is configured to begin an on-the-fly restoration procedure responsive to a failure at the primary terminal in the second network*.

Wei explicitly discloses the system wherein the primary terminal in the virtual ring SNCP network is configured to begin an on-the-fly restoration procedure responsive to a failure at the primary terminal in the second network, (Wei: paragraph 102; link failure between the networks happens to the path between the ring network and the mesh network, specifically, the location of the failure is indicated by SX in FIG. 37, a node failure happens to the interconnection node between the mesh network (**responsive to a failure at the primary terminal in the second network**) and the ring network. In the case shown in FIG. 37, regardless of the location of the failure, there will be corresponding path selector (**primary terminal in the virtual ring SNCP**) to carry out appropriate path selection (**configured to begin on-the-fly restoration procedure**) in order to guarantee the path with the protection against a failure in the ring, in the mesh network and between the networks).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer, and Mascolo by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

48. Regarding **claim 50**, the rejection of claim 47 is incorporated and only further limitations will be addressed. The combined teaching of de Boer, Deboer, and Mascolo does not explicitly teach *the system, wherein the primary terminal in the second network is configured to begin an on-the-fly restoration procedure responsive to a failure at the primary terminal in the virtual ring SNCP network*.

Wei explicitly discloses the system, wherein the primary terminal in the second network is configured to begin an on-the-fly restoration procedure responsive to a failure at the primary terminal in the virtual ring SNCP network, (Wei; Fig. 14; paragraph 79; when a failure occurs on the link between the node 110 of the ring network and the primary node 210 of the mesh network (**responsive to a failure at the primary terminal in the virtual ring SNCP network**), the primary node 210 of the mesh network (**the primary terminal in the second network**) can select to receive only the path transmitted from the node 120 of the ring network and the secondary node 220 of the mesh network to receive (**is configured to begin an on-the-fly restoration procedure**)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teaching of de Boer, Deboer, and Mascolo by incorporating the teaching of Wei to provide a interconnection structure and a path configuration scheme between a ring network and a mesh network by using a dual -node interconnection (DNNI) scheme, and to provide a path protection/restoration method thereon (Wei; paragraph 13).

Conclusion

49. Applicant's amendments necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

50. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Steven Wood whose telephone number is (571) 270-7318. The examiner can normally be reached on 9:00am - 5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Supervisor Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-274-7318.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S.W./
Dec. 9, 2009
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Examiner
Art Unit 2462

/Kevin C. Harper/
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